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ABSTRACT

The document reviews research data, particularly group research, relating to teaching reading to the mildly retarded child. The paper examines the following areas: word recognition/meaning (context, decoding/phonics, sight words); letter acquisition and discrimination; comparative studies of methods and techniques, reading profiles of retarded individuals; and comprehension. A summary and analysis of study results are followed by a discussion of implications for educational practice. Among the conclusions drawn are that there is nothing in the literature which suggests that it is unrealistic to reasonably expect mildly retarded children to achieve a level of literacy commensurate with their mental ages if instruction is designed specifically to meet the retarded child's individual needs; and that the current state of research suggests an inordinate concern with basic word recognition acquisition strategies and an inadequate emphasis upon comprehension processes. (SBH)

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# WHAT RESEARCH SAYS ABOUT READING FOR THE MENTALLY RETARDED CHILD

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## WHAT RESEARCH SAYS ABOUT READING FOR THE MENTALLY RETARDED CHILD

The review and analysis of the research concerning reading and retarded children presented in this paper must be placed within a particular frame of reference if it is to prove valuable to those engaged in providing reading instruction to MR children, specifically those children designated as "mildly retarded" or the educational analog, "educationally mentally retarded" (EMR). First, the nature of a review and analysis of research of any "designated" group tends to obscure an essential premise of education--that each child is a composite of cognitive and affective factors that interact to produce a unique profile. The data reported here is primarily group data; its application and use with individual children in specific instructional situations and settings is not merely a matter of simple transfer. Thus, it is imperative for the educator seeking to derive useful information from a review such as this to place primary emphasis upon the child, the learning task, and the environment rather than within-child assumptions based upon a label which presumably offers insight for "special" instruction based upon the handicapping condition. Second, if such information as that contained in this review is to be truly useful, it should serve as the basis for the application of the strategies described to actual educational settings (most importantly, the classroom or resource room). It is those who teach in such settings who can engage in an iterative process, described by Levin (1965) in the following:

> Data should come from a fine grained analysis of the learner with the curriculum. The time intervals in which we gather data should be as small as practicable: a minute to a day, but certainly no more gross than that. The data must include the conditions--teacher behavior and materials--and the learner's response to them, and in turn, the teacher's behavior because the stream of influence is certainly continuous. In the early stages of curriculum development we should be free enough from the tyranny of statistics to make the observations informal.
>
> Opportunities might be taken to tinker with curriculum in situ. If some presentation does not work, immediate modifications are really hypothesis tests about the teaching-learning sequence. Successful outcomes are the guidelines for how the curriculum must be modified. At the early stages of curriculum development, these observations performed by skilled researchers might be devoted to the accumulation of wisdom. Later the observations may become more formal and precise. The outcomes will be massive information about the learning process with specific guides for revision and again revision.

The areas to be examined in this paper will be: word recognition/meaning (context, decoding/phonics, sight words); letter acquisition and discrimination; comparative studies of methods and techniques; reading profiles of retardates; comprehension. The review will report and synthesize those studies which represent particular sets of findings. Study results will be summarized and analyzed, followed by a discussion of implications for educational practice.

It is impossible to review the literature of reading for the mentally retarded without recognizing some of the limitations inherent in many of the studies, particularly those in the more distant past. Such considerations (called by the researcher threats to internal and external validity) as the absence of adequate control groups, the difficulties inherent in making assumptions concerning equivalence in older retardates and younger normals matched for MA, the description of independent and dependent variables, etc., place limitations upon the utility of findings reported. This should be kept in mind by the reader.

Prior to an analysis of the areas of interest identified above, it is helpful to look at the literature concerning reading and the mentally retarded to obtain some perspective.

One of the basic issues investigated in the literature has been the relationship between reading potential or capacity and achievement. Dunn (1954), in a review of fourteen studies covering the years 1918-1952, reached the following conclusion:

> With 11 studies finding the mentally retarded in special classes to read below mental age expectancy level, and only three studies finding this group to read at, or above, expectancy, the following conclusion seems warranted: In general, mentally retarded children in special classes tend to read below expectancy. In cases where special attention is given to reading, however, it would seem reasonable to expect these pupils to attain reading ages up to, or even beyond, their mental age. (p. 15)

A more recent study by Groelle (1961) found an increasing differential between reading and mental age in proportion to advancing life age, the lag being about one year at the secondary school level. Daly and Lee (1960) reported reading ability consistent with or exceeding MA reading grade level in 62% of the cases examined; 38% exhibited reading disability (30% female, 48% male).

A second set of studies, the "efficacy" studies, has been concerned with the reading performance of retarded students in special vs. regular classes. Studies by Goldstein, et al. (1965), Blatt (1958), and Ainsworth (1959) found essentially no differences in the reading achievement of retardates in regular and special classes, although there was a tendency for better achievement in special class placements (Blatt, 1958; Goldstein, et al., 1965). Other studies (Bennett, 1932; Wassmann, 1933; Cassidy and Stanton, 1959; Elenbogen, 1957) reported that MR children in special classes

perform more poorly than those placed in regular classes. Gates and Pritchard (1942) reported that "slow learning" Ss in a public school program showed reading growth consistent with mental age and were somewhat superior to a public school control group in overall reading ability. Hammill, et al. (1972) found that retarded Ss integrated into a regular classroom with supportive help provided through a resource setting made reading gains like those expected of a normal group and above MA expectancy.

While the results of these investigations must be viewed within the context of the limitations of efficacy studies (see Polloway and Snell, 1975), it is significant to note that there is a body of evidence which does support the contention that retarded Ss can learn how to read in regular classes at least as well as they do in special settings. In light of the "least restrictive alternative" mandate of current federal legislation (P.L. 94-142), this factor is of some significance.

Comparisons of reading performance of retarded and normal children have been numerous in research literature. Of ten studies reported by Dunn (1954), four found that MR or "dull normal" Ss tended to perform more poorly than normal or superior Ss of comparable mental ages, while the remaining studies found mentally inferior Ss to work up to or above the level of their brighter peers of comparable MA. Other studies tend to divide along similar lines. One of the most representative of these studies is that conducted by Dunn (1954). A comparison of 20 special class MRs and 30 normal Ss of comparable MA found retardates inferior on tests of oral and silent reading and use of context clues. No significant differences were found in the areas of eye movement, word and phrase recognition and

sound-blending skills. Nonretarded Ss performed more poorly than retardates in the areas of addition of sounds and repetitions. In a similar comparison Bliesmer (1954) found that bright Ss performed significantly more capably than retardates of equivalent MA in the following areas: recognition of factual details and main ideas, drawing inferences and conclusions, listening and total comprehension. In addition bright Ss scored higher (although not significantly so) on memory for factual details and perception of relationships among explicitly stated ideas. The groups were not differentiated on word recognition and word meaning measures or reading rate.

Two areas of interest emerge from this data: (1) there is some evidence that MRs can perform at a level of competence in certain reading skills/behaviors comparable to that of normal Ss of similar mental ages; (2) there tends to be less difference between retardates and normals matched for MA on basic word recognition tasks than on higher level cognitive (comprehension) behaviors. This latter conclusion would appear to be consistent with the premise that basic word recognition skills tend to be less difficult to acquire and less highly dependent upon intelligence than the comprehension skills/behaviors.

## Word Recognition/Meaning

A substantial majority of the studies investigating reading for mentally handicapped children have focused upon strategies for teaching the acquisition of words.

### Context

One area which has received particular attention has been the use of context by retarded Ss (see review by Streib, 1976-77). An early study by Chipman (1935) reported the behavior of retardates on a kind of cloze task

requiring Ss to generate as many responses as possible to fill in adverb, adjective, and verb deletions in a series of sentences. The author reported that Ss performance indicated a poverty of ideas or a lack of expressive ability; words supplied tended to have a low mental age value. More correct responses to the task were made by older Ss with higher MAs. Dunn (1954) used a cloze type task which required retarded and MA matched nonretardates to read sentences orally and insert words which had been deleted. His findings indicated superior performance by nonretarded Ss. Studies by Semmel, et al. (1970), and Goodstein (1970) found retardates inferior to normals in cloze performance. Cawley, et al. (1968), found no differences between retarded and nonretarded Ss on a cloze task when initial differences in mental age and reading age between groups were eliminated. Hargis (1972) found that retarded and nonretarded Ss did not differ in number of exact words replaced on a cloze task but that nonretarded Ss did supply a significantly greater number of gramatically correct synonyms than did retardates. Levitt's (1970) results suggested that retarded and normal Ss were not differentiated on a context task. Retardates' ability to use contextual constraints beyond the sentence in which an unknown word appeared was tested by Ramanauskas (1972) through a cloze task. The results of the study indicated that more exact replacements occur when sentences in a passage are presented in their natural order than when they are presented in random order.

Of particular significance in the body of studies cited above are the following findings: (1) retarded Ss may benefit from training in context under a recognition condition in which a correct response is selected from a series of alternatives (Cawley, et al., 1968; Goodstein, 1970); (2) retardates may be able to make use of contextual information beyond the

immediate sentence (Ramanauskas, 1972); (3) there is some evidence that retarded Ss may perform as well as nonretardates on some context tasks in both regular reading situations (Levitt, 1970) and when using the cloze procedure (Hargis, 1972). Goodstein's (1970) conclusions that differences in cloze performance between MA-matched EMRs and normals were quantitative rather than qualitative deserves closer scrutiny.

Decoding/Phonics

A number of studies have investigated the abilities of retarded Ss to use sound/symbol correspondences and/or decoding skills. Vandever and Neville (1976) compared the transfer effects of synthetic and analytic presentation of words in a contrived alphabet. Their findings indicated the facilitative effects of the synthetic approach (individual sounds combined to form words) on a transfer task involving recognition of both words consistent with training words (same phoneme/grapheme relationships) and those which were inconsistent. While nonretarded Ss learned more words in both training and transfer phases of the study than retardates, the authors conclude that "...synthetic methods of instruction will enable children, including retarded children, to develop transfer skills and that the development of transfer skills should be a goal for reading instruction, especially for retarded children" (p. 502). An earlier study by the same authors (Neville and Vandever, 1973) found that both retarded and nonretarded Ss learned a greater number of words and showed greater transfer under a synthetic approach to decoding than under analytic presentation. There were no differences between retarded and nonretarded Ss in number of taught and transfer words recognized.

Earlier studies by Hegge (1934), McIntyre (1937), and French (1950) report success through use of systematic phonic instruction.

The evidence from the studies reviewed above suggests the efficacy of phonics instruction for retarded Ss. Of particular note is the finding (Vandever and Neville, 1976; Neville and Vandever, 1973) that retardates do engage in transfer of learning under a synthetic approach to instruction.

Sight Words

The single largest body of studies has focused upon approaches designed to facilitate sight word acquisition. Many, though not all, of these studies have used programmed instruction and/or teaching machines. Several studies have examined the relative value of prompting vs. confirmation procedures in the acquisition of basic sight words. Prompting involves providing S with a visual or auditory depiction of the word before response to prevent error; confirmation involves post-response evaluation of the rightness or wrongness of an answer. Hawker, et al. (1964) did not find significant differences on sight vocabulary acquisition between prompting and confirmation procedures but did report results indicating greater learning under a word stimulus/picture response format than under a picture stimulus/word response format. In a further study, Hawker (1968) replicated these results. These findings are consistent with earlier studies (such as that of Blackman and Holden, 1963) in which neither prompting nor confirmation was found to result consistently in superior sight word acquisition.

A representative picture of programmed instruction techniques is found in the critical review by Greene (1966). From the findings of the 17 studies reported, it may be inferred that carefully structured instructional sequences do tend to have a facilitative effect upon the acquisition of words. While it is not typically possible for the teacher in the classroom or resource setting to make use of the extensive automated/programmed sequences characteristic of such studies, it is important to note that some of the techniques utilized in these studies have the potential for adaptation for classroom instruction. In addition to prompting and confirmation techniques, the following studies describe specific techniques having implications for classroom instruction. Candland and Conklyn (1962) used a modification of the "oddity problem" to teach MR deaf-mutes to read. The oddity problem consists of presenting the S with X stimuli, all but one of which are the same. In this study Ss were guided through the following phases: I. selecting a different colored block from a set; II. selecting the odd letter block from a set; III. discriminating words on cards by the same technique; IV. presenting Ss with pictures representing words learned and requiring matching by Ss. In addition Es taught simple action verbs by demonstration. Ss then matched simple verbs and nouns creating basic sentences. As part of an extensive reading program for neurologically impaired, mentally retarded, and severely emotionally disturbed Ss, Hewett, et al. (1967) report the use of an errorless training sequence for certain Ss who failed to reach criterion on a word acquisition task.

Several additional studies examined approaches to sight word acquisition. Dorry and Zeaman (1973, 1975) used a picture-word presentation

followed by picture-fading technique, finding it superior to standard picture-word presentation for the learning of basic vocabulary words. A later study by Dorry (1976) found that a "fade picture out-fade word in" format was as effective as the "fade picture" approach of the earlier studies (Dorry and Zeaman, 1973, 1975). Miller and Miller (1968, 1971) found support for presentation of words under "accentuated" conditions in which objects blended into their customary printed representations. Such approaches were found to be superior to a conventional "look and say" approach in which words and objects, although paired, remained separate. Drinkwater (1972) found that retardates exposed to words paired with "high affect" (preferred by Ss in pretest) and "low affect" pictures recognized a greater number of words with fewer trials to criterion under the word-"high affect" picture condition. In a series of studies Brown and others (1970, 1971, 1972, 1974) demonstrated the efficacy of teaching trainable level Ss to read various parts of speech by means of a "whole word" approach in which Ss "...were taught to verbally label a word in its entirety without regard to phonetic, contextual or structural cues" (Brown, et al., 1974, p. 51). The verbal labeling was followed by a required motor response to demonstrate understanding. Rajaker (1961) found a significant relationship between training in visual imagery and memory for word forms with MR adolescents.

The effects of type of modality input upon the acquisition of words/parts have been of interest to a number of investigators. An approach to reading long associated with instruction of retarded children has been the kinesthetic or tracing technique. Kirk (1933) compared the learning of words ty retardates under a conventional "sight" method and by a manual tracing or "kinesthetic" method. Individual results showed

that all Ss retained more words under the tracing condition "although the differences were not significant for most of the subjects" (p. 531). Group results indicated no differences between methods in trials to learning; however, the manual tracing group was superior in retention. Tyler (1974) investigated the effects of matching reading training to the modality strengths (visual or auditory) of retardates on a syllable learning task. After screening, Ss were randomly placed in instructional groups labeled "preferred" or "nonpreferred" modality. Results following instruction showed no differences among visual-visual, visual-auditory, auditory-visual, auditory-auditory groups. Sabatino and Dorfman (1974) assessed the effects of matching learner perceptual modality (audile, nonpreference, visile) with commercial reading programs deemed to reflect a particular modality (Sullivan Programmed Reading Series-visual; DISTAR-auditory). There were no significant differences favoring either of the modality groups. Evans (1970) found that auditory-visual presentation of common words in conceptual categories was superior to visual or auditory presentations alone on a measure of word recall.

Sight word studies tend to support the pairing of words and pictures and/or objects as a technique for facilitating word recognition. Prompting and confirmation procedures apparently do not produce differential sight word acquisition. Promising techniques using the oddity problem and errorless discrimination training are reported. The effects reported in studies of multi-modality input are mixed.

Letter Acquisition and Discrimination

A series of studies have assessed the effects of a variety of approaches on the acquisition of letters. Davy (1962) used Woolman's

Progressive Choice method for teaching letters and sounds to TMRs. This approach is described as one which defines reading "...as the process by which meanings are obtained from visually or tactually perceived shapes... essentially the method is concerned with the elimination of response alternatives and the simplification of the presentation of stimuli (in the case of reading, letter-word patterns). Each letter has only one shape, and in the introductory program, only upper-case letters are used... The shapes are introduced in such a manner as to maximize their discriminability and identifiability" (p. 274). The author reports younger Ss retaining a large number of letters taught and older Ss progressing to meaningful reading by combining letters learned into words. A series of studies (Evans and Bilsky, 1972; Evans and Bilsky, 1975; Bilsky, et al., 1975) examined the effects of training on the discrimination of confusable letters. The initial study (Evans and Bilsky, 1972) found that "high" and "low" MR readers performed differently on matching-to-sample and "oddity" tasks; "high" readers benefitted more from matching training than from oddity training and "low" Ss made fewer errors than "high" Ss on the oddity task. There was no difference between the groups on the matching task. On a transfer task, "high" readers performed better than "low" readers overall and under the matching condition; there was no difference between groups on the oddity training task. A second study by Bilsky, et al. (1975), investigating procedures for teaching retardates to discriminate b and d, found that two-choice discrimination learning was more difficult than matching-to-sample or oddity conditions. A second experiment found simultaneous matching-to-sample

procedures easier than successive matching-to-sample procedures. Evans and Bilsky (1975) found that distinctive features training (target letters discriminated from highly similar distractors) was superior to a placebo control condition as measured by a test of simultaneous discrimination and, for low functioning Ss, by alphabet and matching tests. Guralnick (1973) attempted to determine if training on distinctive features relevant to the discrimination of alphabet letter pairs facilitates discrimination of those pairs and compared the effectiveness of three procedures for emphasizing the distinctive features (distinctive feature - curve/straight, horizontal/slant, open/close; distinctive feature + fade-in; highlighting critical feature differences). All three procedures facilitated letter discrimination to the same extent, and all treatments were superior to a no-treatment condition. However, only the control, highlighting, and distinctive-feature groups made the transition to a generalization test. As part of a study of training matching-to-sample by means of an automated technique, Harper, et al. (1971) found that confusion arising from the letters, b, d, p and q on the part of MRs was like that of normals reported in prior studies. The cumulative significance of this body of study is that techniques which in some way focus the attention of Ss upon pertinent dimensions or features of letter stimuli tend to facilitate acquisition of letters. There is no conclusive evidence that training involving highly similar or highly dissimilar letters is more effective on measures of letter acquisition. Oddity and matching-to-sample training provided different results with "low" and "high" reading Ss.

Comparative Methods

A body of studies has been concerned with comparative analyses of various approaches to the acquisition of basic reading behaviors. Malpass, et al. (1964) compared four approaches to teaching sight words: fully automated typewriter keyboard, semi-automated multiple choice machine, conventional classroom instruction and individual tutoring. Automated instruction of both types proved more effective for acquisition of taught and non-taught words than did conventional classroom instruction. The individual tutoring approach (both machine and non-machine based) resulted in significant word-score gains for taught words comparable to the keyboard method and superior to the multiple-choice method, although retention for Ss given human tutoring was not as high as for tutoring under automated conditions. On a test of word recognition, keyboard and classroom groups were initially superior to the multiple choice group; this difference was not observed after 30 days. Vergason (1966) examined sight word retention under automated [paired associates-word/picture] and conventional or traditional instruction [flashcards, copying, pronunciation drills, spelling, etc.]. Findings indicated no differences in retention after one day, but showed significant differences favoring automated instruction at one, two, four and fourteen months. Vandever, et al. (1976) found a programmed, whole word approach to beginning reading [Edmark] superior to a linguistic approach [Merrill Linguistic Readers] and a second programmed series with a linguistic orientation [Sullivan]. Vandever and Neville (1974) compared the effects on retarded and nonretarded Ss of three types of cues to

word recognition (words outlined, contrast-words surrounded by black background; letter cues). Words were presented in a contrived orthography. A primary finding was that retarded Ss learned significantly more words under the letter cue condition than under the outlining and contrast conditions, but the letter cue format did not affect words learned by normal Ss. Daly and Lee (1966) found no differences in reading rate between retarded Ss grouped homogeneously or heterogenesouly (by reading level) for instruction. Boyle (1959) found that groups of retarded adolescents made significant gains in reading under programs identified as traditional, experience or semiexperience; there were no between-group differences. Blackman and Capobianco (1965) reported significant gains in reading for groups taught by both programmed and traditional approaches. An early study by Braem (1931) comparing the oral reading of retarded Ss taught by either sight word or phonic approaches found that the sight word group made three times the mistakes and took three times as long to read as the phonic group. Results of comparative studies reinforce the oft-quoted, "no single best way to teach reading." There is some support for (1) gains in reading being sensitive to individualized teaching (Malpass, et al., 1964), and (2) for letter-based instruction to be superior to configuration training (Vandever and Neville, 1974). There also are findings indicating that retarded Ss can and do benefit from conventional instruction.

Reading Profiles of Retardates

Patterns of reading behaviors by retarded Ss have been the focus of a number of studies. Allen and Wallach (1969) found support for the premise that word recognition ability is higher than word defining

(cognition) ability by administering the PPVT to EMRs under two conditions: defining the word-cognition and selection of a picture which defines the word-recognition. Sheperd (1967) compared "adequate" and "inadequate" EMR readers (defined by reading age projected MA). Adequate readers were significantly superior in silent and oral reading, use of context clues, and sound blending. Groups did not differ in auditory discrimination. A comparison of oral reading patterns showed that inadequate readers produced significantly more faulty vowel and consonant sounds, more reversals, sound omissions, substitutions, and words aided and refused than adequate readers. The adequate readers made more repetitions. There were no differences between groups on addition of sounds and words and word omissions. Levitt (1972) found that retarded Ss did not make more oral reading errors than nonretarded Ss in the "multiple cue" category [graphemic-phonemic; graphemic-phonemic with context; graphemic with context] but did make fewer "search for closure" responses [self-corrections, regressions, repetitions] and more errors in the "simple or inferior" category [graphemic; contextual; random substitutions; terminal reversal]. Retardates also made significantly more morphological errors, while nonretardates made significantly more "no responses." There were no differences in the category "nonwords." A case study by Vuillemot and Keller (1956) of a mentally handicapped boy found the following factors associated with his reading failure: wide test scatter; limited vocabulary; language production and articulation problems; reversals and confusions in reproducing auditory stimuli. Specific aspects of reading behavior noted were: failure to acquire consistent basic sight vocabulary; difficulty in phonic analysis and blending;

inability to use context clues; failure to benefit from kinesthetic cues; perseveration of bizarre errors or unusual responses. An extensive analysis of psychological factors related to early reading behavior of EMR Ss by Blackman and Burger (1972) found that "the successful acquisition of early reading skills is related to a variously expressed underlying memory process" (p. 226). This was also true for nonretarded Ss. Some findings of interest emerge from the "profile" studies. Retardates tended to make fewer repetitions (a sign of higher level processing) than normals; this was also true of "poor" vs. "good" reading MRs. Levitt's (1972) findings, however, that retarded Ss did not make more errors than normals in the multiple cue category, but did make more "simple" errors, seems worthy of further scrutiny, as does the finding of the significance of memory (Blackman and Burger, 1972).

Comprehension

An examination of the area of comprehension studies with retarded Ss reveals a dearth of research. Outside of the context studies reported earlier in this paper, there have been few investigations of higher level reading behaviors in connected discourse. Dunn (1954) found that retarded Ss have greater difficulty with both explicit information and inferences than normals. Bislky and Evans (1970) found that retarded Ss with higher comprehension scores clustered words in conceptual categories during free recall better than Ss with lower comprehension scores. This finding was at variance with an earlier study by Evans (1970). A second result of the study was that Ss initially receiving a clustered list in the initial trial block produced higher overall clustering scores than Ss receiving a random

list initially. The authors suggest that "...it may well be feasible to establish relatively stable and generalizable strategies for the organization of verbal materials. However, the conditions under which it is possible to establish those tendencies have not yet been clearly identified" (p. 775). An early descriptive study by Postel (1937) examined the effects of high interest-low vocabulary adapted stories on the reading progress of retarded boys. During a three-month period, Ss gained six months on a measure of paragraph meaning.

A series of studies by Blake (1976) examined retardates' performance in connected discourse-sentences. Some representative findings from this series of studies were: (1) retardates performed less well than CA-matched ("older") and MA-matched ("younger") normals on a task of drawing inferences; (2) normals exceeded MRs in comprehending concrete sentences. On abstract sentences older normals were superior to younger normals and retardates, who did not differ; (3) normals exceeded retardates on a test of acquisition of ideas after material was organized in different ways: 4 separate kernel sentences; 2 ideas in each sentence; 4 ideas combined in one sentence. The 4 separate and 4 combined treatments were superior to the 2 ideas/sentence format; (4) retarded and normal Ss performed similarly on sentences with a single embedded relative clause; older normals exceeded younger normals and retardates, who did not differ, on double embedded sentences; (5) general comprehension and exact recall of normals and retardates is not facilitated by chunking procedures.

A series of earlier studies from the same on-going research project, of which Blake's studies are a part, examined aspects of comprehension.

Ballagas (1973) found no differences between the use of pictures and underlining as attention-focusing techniques for the learning of a series of temporal relationships (sequence of ideas) in a story. Blake (1973) examined the effects of advance organizers (preview summaries vs. preview questions) upon the finding of the main idea. Results showed the facilitative effects of both organizers in focusing Ss attention upon main ideas. Within both treatments older normals > younger normals > retarded. A related study by Dunman (1973) examined whether preview summaries or underlined main ideas were more effective in aiding Ss to identify the main idea in connected discourse. Results were like those reported by Blake (1973): older normals > younger normals > retardates. Both approaches facilitated Ss performance in identifying main ideas.

Richmond (1973) investigated the differential effects of underlining and preview summaries upon the acquisition of supporting ideas. Both interventions facilitated comprehension to a similar degree. As in previous studies older normals > younger normals > retardates. Little (1973) found results like those reported by Richmond (1973) when Ss were exposed to preview questions and preview summaries designed to focus Ss attention upon supporting ideas.

Knapczyk and Livingston (1974) sought to determine whether a prompting procedure designed to initiate question-asking by non-question-asking EMRs would result in performance gains in reading comprehension and on-task behavior. Findings indicated significant improvement by Ss on number of questions asked, on-task performance, and reading comprehension. Sidman and Cresson (1973) described a process for teaching two severely retarded Ss simple comprehension by an instructional sequence of (1) matching

printed words to each other, (2) matching dictated words to their pictorial representations, (3) matching dictated to printed words, resulting in oral reading of words with understanding. Matching of dictated words to pictures and to printed words transferred to the match of printed words to pictures.

The most pertinent finding from this body of studies is the absence of a focus upon higher level comprehension behaviors in retarded individuals. Those studies which have been done suggest the potential beneficial effects on comprehension of imposing organization on meaningful discourse through the application of mathemagenic behaviors. It is speculated that the absence of studies in this area curiously parallels the common assumption of retardates' inability to think or function at higher cognitive levels.

Conclusions and Discussion

On the basis of the studies reviewed in the various areas, the following conclusions have been drawn.

First, there is nothing in the literature which suggests that it is unrealistic to reasonably expect mildly retarded children to achieve a level of literacy commensurate with their MAs if instruction is designed specifically to meet the retarded child's individual needs. This is to ask no more of public education than to do what it says it does for all children.

Second, it is important for those engaged in the reading education of retarded children to adopt a posture which rejects stereotypic thinking represented by statements such as "MRs can't learn phonics or comprehension" or "multi-modality input is the only viable instructional strategy

for dealing with MRs," etc.,,and which perceives each child's reading needs on an individual, not categorical, basis.

Third, the current state of research suggests an inordinate concern with basic word recognition acquisition strategies and an inadequate emphasis upon comprehension processes. While such research studies may be more difficult to construct and, I suspect, may require research approaches other than an inferential statistical model, they are very necessary. In this vein, there is much to be learned from parallel areas of inquiry. Two brief examples are mentioned here. As Cullinan, et al. (1975) indicate in their analysis of research in modeling, "Improved cognitive skills have been prompted through modeling approaches... Various types of conceptual behaviors... were easily acquired by children who observed demonstrations of the desired response strategy... Academic skills also may be taught effectively through modeling" (p. 213). Studies of retardates' reasoning, such as that of Antonak and Roberge (1978), should offer insights for examinations of reading comprehension.

A particular attempt must be made to translate the large body of research findings into practices which can be used by practitioners who teach MRs in classrooms and/or special settings. For example, the error-less discrimination training sequence described in Hewett, et al. (1967) is adaptable for use in a classroom situation, as are some of the other findings of programmed and/or teaching machine studies.

Finally, the perverse notion that retarded children are somehow in need of "remedial" reading must be rejected. It is unclear at this time whether and/or to what extent normal and retarded individuals differ

qualitatively in how they learn to read. The ultimate goal of reading education for retarded Ss must be to provide instruction appropriate to their needs, in effect, an affirmative developmental stance.

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